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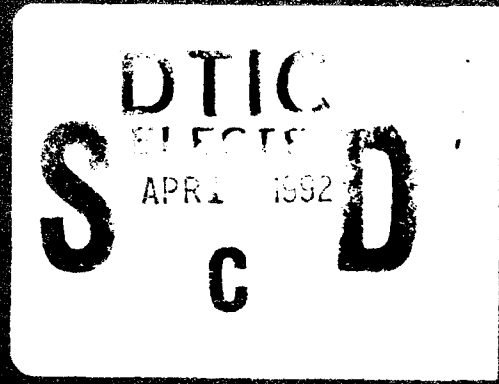
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PLANNING CONSIDERATIONS FOR
A FUTURE OPERATIONAL CAMPAIGN
IN NATO'S CENTRAL REGION

William T. Johnsen
Thomas-Durell Young



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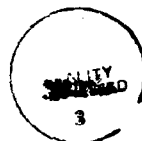
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**William T. Johnsen
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* * * * *

As this report goes to press, the "Soviet Union" has disappeared from the world stage and been partially replaced by the Confederation of Independent States, whose future is far from clear. As the eventual form or composition of the Confederation of Independent States cannot be discerned clearly at this point in time, the term "former Soviet Union" will be used in the study.

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Comments pertaining to this publication are invited and may be forwarded to: Director, Strategic Studies Institute, U.S. Army War College, Carlisle Barracks, PA 17013-5050. Comments also may be conveyed telephonically to the authors via commercial telephone (717) 245-3911 or DSN 242-3911.

FOREWORD

With the demise of the Warsaw Treaty Organization, the withdrawal of former Soviet forces from Central Europe, and the disintegration of the Soviet Union, some might question the need to examine planning considerations for a future campaign in NATO's Central Region. The short answer to that pertinent question is that such an analysis is needed precisely because of the magnitude of the tumultuous changes of the past 2 years. Indeed, the current European security environment bears little, if any, resemblance to the long familiar security landscape of Central Europe.

Risks to the Alliance have been reduced dramatically and warning times have been greatly extended as former foes strive to become partners and numerous arms control treaties, agreements, and initiatives are implemented. The Alliance recognized these fundamental changes and recently agreed on innovative political and military strategic concepts to accommodate the new conditions that will rely heavily on crisis management activities, mobilizable forces, multinational formations, and intra-European reinforcements. Moreover, the military command structure of the Alliance is being revamped from top to bottom. Simultaneously, individual nations are dramatically reducing and restructuring their forces. Many of the insights into the conduct of modern warfare derived from the war in the Persian Gulf must be assessed and, where appropriate, assimilated. Finally, and perhaps most importantly, German unification has fundamentally redefined NATO's boundaries in Central Europe.

All of these changes have been overwhelmingly for the better. Nonetheless, they represent a significant departure from the past and must be accommodated in any future security planning within the Central Region. Existing plans will have to be adapted to new conditions, where possible, or abandoned, as required. Because of the magnitude of the changes involved, this will be no easy task. The purpose of this study is, therefore, to identify some of the key issues, conduct

first order analysis, and provide initial assessments to contribute to the ongoing debate over the future security environment of Central Europe.

A handwritten signature in black ink, appearing to read 'Karl W. Robinson', written in a cursive style.

KARL W. ROBINSON
Colonel, U.S. Army
Director, Strategic Studies Institute

PLANNING CONSIDERATIONS FOR A FUTURE OPERATIONAL CAMPAIGN IN NATO'S CENTRAL REGION

Introduction.

Given recent upheavals in the European security system, especially the demise of the Warsaw Treaty Organization and, most importantly, the revolutionary changes in the former Soviet Union, many observers question the need for an examination of the conditions governing a possible future campaign in NATO's Central Region. Indeed, some have concluded that a threat to NATO's security in Central Europe no longer exists, obviating the need for such planning. While the future may validate such conclusions, current uncertainties in Eastern Europe and, particularly, the volatility of the former Soviet Union preclude blithely assuming away the military requirement to prepare appropriate operational plans for the defense of NATO's Central Region. Thus, despite existing and potential improvements in the emerging security environment in Central Europe, NATO military planners remain charged with developing new plans for the defense of the Central Region.

This study raises some of the more important considerations that should be taken into account during future operational planning for the Central Region. The intent is to raise as many issues as possible and stimulate debate on future operational concepts and plans that emerge to meet the changed security requirements. The study identifies new issues and conditions *resulting from the rapidly changing* European security environment and seeks to pose as many questions as possible about their potential effects. The paper does not, however, purport to provide definitive answers—to stake such claim in these revolutionary times would be rash.

Nowhere is there a greater need to revise existing NATO operational plans than within the Central Region. The chain of events that began with Gorbachev's announcement of

unilateral withdrawal of Soviet forces from the Czech and Slovak Federal Republic (CSFR), Hungary, and Poland and the negotiated withdrawal of the Soviet Western Group of Forces from Germany dramatically altered the strategic setting in Central Europe. These events, combined with the implosion of the Soviet Union, and the concomitant disintegration of the Soviet armed forces have greatly reduced the heretofore immediate military threat to NATO's Central Region. Most importantly, perhaps, the unification of Germany has *redefined* the area to be defended within the Central Region. In sum, the events of the past 2 years have rendered obsolete NATO's existing plans for the defense of the Central Front.

The Atlantic Alliance has long recognized the significant changes underway in Europe and since May 1990 has been reexamining its strategy. Undoubtedly, any changes in the Alliance strategy will also influence the development of new operational plans. While the broad conceptual framework of the emerging military strategy has been articulated (i.e., smaller numbers of forces divided into main defense, reaction, and augmentation forces; reduced forward presence; increased reliance on reconstitution and multinational formations, and nuclear weapons as "weapons of last resort"),¹ the final shape and detailed content of the Alliance strategy are not yet known. But, the broad thrust of the strategy thus far revealed provides sufficient detail to begin general, if not specific, operational planning. In the future, military planners will have fewer active units to rely upon and will have to place greater reliance on the mobilization and reconstitution of units. These forces will be divided into Reaction Forces (Immediate and Rapid), Main Defense Forces, and Augmentation Forces, all of which will have varying rates of readiness and missions. To support this strategy, an operational concept of mobile counterconcentration that relies heavily on operational level mobility, increased lethality of advanced conventional munitions, and the maneuver of forces in depth throughout the battlefield is under development.²

Changed strategic conditions and new operational requirements will require considerable adaptation on the part of NATO planners. Operational planning will become

increasingly complex and planners will have to break old habits and develop new patterns of thought that conform to new political and security conditions. For example, in the past, NATO forces in the Central Region faced a clear threat and operational planners concentrated exclusively on defeating a massive Warsaw Pact offensive. In the future, operational planning will take place in a more ambiguous environment and potential employment options will fall across a broad spectrum ranging from, for example, mass migrations of people resulting from economic dislocation, to containing local or regional crises which may spill over NATO borders, to the more traditional focus on large scale military operations. At the same time, many of these alternatives are not covered by extant military plans and NATO planners will face a *tabula rasa* from which to draw guidance. Moreover, many of these options fall outside traditional military missions or do not lend themselves strictly to the application of military power and will require closer integration of political, economic, and diplomatic means. Individually, each of these issues is highly complex and extremely sensitive, but in combination, the difficulties are compounded and will present NATO planners with difficult challenges.

From Threat to Risks.

Under the new strategic conditions, NATO faces greatly reduced levels of risk in the Central Region. Withdrawal of Soviet forces from Central and Eastern Europe, the demise of the Warsaw Treaty Organization, implementation of the CFE Treaty, and the collapse of the Soviet state have significantly reduced risks to NATO posed by the former Soviet Union. That said, even a more benign derivative such as the Confederation of Independent States, or one of the major republics (e.g., Russia or Ukraine), may still possess considerable nuclear and conventional military capabilities. For the moment, the ongoing breakup of the Soviet empire obscures how CFE Treaty entitlements of equipment will be distributed among the members of the former Soviet Union. That said, it is likely that the bulk of material will remain in the hands of Russia, Ukraine, Byelorussia, and Kazakhstan. Finally, the tumultuous events in the former Soviet Union have not yet been played out. And,

while all might hope for and anticipate a positive outcome, that condition is not guaranteed.

Even should the former Soviet Union (or its disintegrating parts) emerge as a more benign neighbor, its substantial residual military power must be reckoned with. Thus, notwithstanding recent events in the former Soviet Union, the belief of the North Atlantic Council expressed in its December 18, 1990, communique still rings true: "Even in a non-adversarial relationship, prudence requires NATO to counterbalance the Soviet Union's substantial residual military capabilities."³ Future military capabilities retained within an eventual successor to the Soviet Union must, therefore, remain the yardstick against which future NATO operational plans and considerations in the Central Region are measured.

If one accepts that the security of the Central Region hinges on defense of the Federal Republic of Germany, then NATO planners face two distinctly different requirements in designing new operational concepts. The first requirement will address the period from now through the full withdrawal of Soviet forces, or until roughly 1995. The post-1995 period constitutes the second case. In the first instance, NATO planners must take into account, however unlikely the probability, potential Soviet actions detrimental to NATO security interests while Soviet forces remain on German soil. In the second case, planning will become more complex as the Soviet "threat" recedes and new risks emerge from the breakup of the Soviet empire. Undoubtedly, the post-1995 case will occupy the greater amount of planners' time and concentration.

Nevertheless, plans for possible operations up to the full Soviet withdrawal cannot be dismissed out of hand. Approximately 230,000 Soviet personnel remain on the territory of the Federal Republic and their complete withdrawal under treaty will not occur until the end of 1994.⁴ There are two conceivable scenarios for the eventual disposition of these forces. In the first, Soviet forces are returned to the former Soviet Union, without incident; perhaps, prior to their scheduled 1994 departure. In such a scenario, the Alliance would obviously not be called upon to assist the Federal Republic.

The second scenario involves elements of the Soviet Western Group of Forces failing to respond to central command and control, or, under worst conditions, dissolving into chaos. Such a contingency, while remote, is not impossible. All one has to do is observe the current state of morale and discipline of the Soviet Western Group of Forces to appreciate the potential for large scale desertions, riots, or revolts by subordinate commanders. Indeed, a number of Soviet officers recently declared they would disobey orders to withdraw from Lithuania unless adequate quarters were available at their new posting.⁵ What must be appreciated is that irrespective of the likelihood or causes of these scenarios, if they do occur they will be played out on the sovereign territory of the Federal Republic and could require a military response from the Alliance.

The second and more relevant requirement is planning for the defense of the Central Region after 1995. As indicated earlier, such planning should be predicated upon the question: to what extent might the post-1995, residual military capabilities of the former Soviet Union pose risks for NATO?⁶ In the midst of the political upheaval currently underway in the former Soviet Union, no one can authoritatively predict the future course of events. Therefore, in preparing future operational plans for the defense of the Central Region, NATO planners must remain cognizant of these military capabilities and the risks involved.

Even in the complete absence of future risks from the former Soviet Union, NATO military commanders must anticipate and plan for hazards that may emerge from other quarters. While the world may be becoming a safer place, recent events in Iraq and the ongoing civil war in Yugoslavia clearly demonstrate that it is not wholly safe, and is clearly less predictable. Planners heretofore concerned only with defending against a massive Soviet theater-wide offensive will have to address lesser, but still challenging, risks emerging from the dissolution of the Soviet empire.

NATO Forces.

Under the terms of the CFE Treaty, within the Atlantic to the Urals (ATTU) region combined NATO forces should enjoy a numerical superiority over the former Soviet Union of roughly 1.5:1.⁷ Such a condition may not reflect reality, however. For example, if items of treaty limited equipment (TLE) that Germany acquired under unification are not included in NATO totals, overall ceilings for most categories were set at levels higher than existing NATO inventories. Moreover, while the NATO "harmonization process" attempted to allocate all entitlements of TLE, the sum of individual national entitlements will not reach the ceilings authorized under the treaty.⁸

Even the allocation of TLE entitlements under the "harmonization process" is a theoretical exercise. Current national forecasts within the Central Region indicate future force structures will not approach TLE entitlements. Germany, for example, has announced reductions in its ground forces of roughly 40 percent and its air forces by more than half.⁹ Moreover, by the end of 1994 the *Bundeswehr* must also reduce its active duty strength from approximately 430,000 to 370,000 to meet the terms of the treaty governing the withdrawal of Soviet forces from the former territory of the German Democratic Republic.¹⁰ Although public pronouncements have not specified eventual equipment levels, given the size of its future force, it seems highly unlikely that Germany will maintain TLE holdings approaching its entitlements.

At the same time, the *Bundeswehr*, the largest European army of the Alliance, is currently undergoing significant changes and restructuring.¹¹ In addition to reductions in the number of units, the *Bundeswehr* will implement a new national structure which combines the field army and the territorial army and their staffs, and transfers a corps headquarters into the newly unified eastern Laender.¹² An instructive aside is to note that in addition to turmoil created by its reductions and reorganizations, the *Bundeswehr* must also integrate some 50,000 (from an initial 106,000 personnel at unification) of the officers and men of the former East German *Nationale Volksarmee* (NVA). The former NVA personnel,

themselves, are in the midst of physical and mental transformation, through selective introduction of Western equipment and education in the concept of *Innere Fuehrung*, thereby becoming members of the armed forces of a democratic state.¹³ Given the degree of past indoctrination suffered by members of the NVA, it may take considerable time for their full integration into the *Bundeswehr*. Moreover, the operational effectiveness of these units will be suspect until approximately 1994.¹⁴

Nor is the Federal Republic of Germany the sole nation within the Central Region engaged in substantial reductions or restructuring of its armed forces. The United Kingdom, in its latest defense white paper, indicated reductions in its ground forces of roughly 25 percent.¹⁵ Granted, the paper does not explicitly address equipment holdings. However, it hardly seems logical in the days of shrinking budgets to maintain large numbers of equipment that cannot be manned. Therefore, a commensurate reduction in TLE holdings should also be anticipated. The United States, likewise, is reducing significantly its ground and air forces in Europe. Current indications are that by 1995 the United States will retain approximately 150,000 personnel in Europe organized around one corps of two divisions and three wings of combat aircraft (roughly 216 aircraft), or reductions of greater than 50 percent from current levels. Some forecasters project eventual strength levels of 100,000 or below.¹⁶

Belgium, France, and the Netherlands have announced similar intentions to make comparable reductions.¹⁷ Thus, within the Central Region, at least, NATO forces will not be as strong as allowed under the theoretical entitlements of CFE. How far these cuts will go remains to be seen, but in designing future operational concepts, NATO planners should anticipate substantially smaller forces than are authorized under the CFE Treaty.

Multinational Forces.

The London Declaration which announced that henceforth the Alliance would rely more heavily on multinational formations¹⁸ represented a bold, political stroke anticipating

the new requirements facing NATO. Nonetheless, transforming the political appeal of multinational formations into practical military reality presents daunting challenges. The difficulties inherent in differing languages, procedures, equipment, ammunition, and repair parts—the long known and considerable problems of NATO interoperability—immediately leap to mind. But, while these obstacles are significant, they can be overcome—given sufficient time, energy, and resources.

Political and financial realities will dictate that future AFCENT commanders will have fewer corps in the Central Region. The May 1991 NATO Defense Planning Committee final communique speaks of maintaining six main defense corps in the Central Region, down from eight.¹⁹ To compensate for this reduction in national forces, NATO will in the future rely on multinational forces drawn from across the Alliance. A first example of such Alliance-wide efforts was contained in the decision of the NATO Defense Planning Committee, at its May 1991 meeting, to create a multinational, rapid reaction corps, commanded by a British officer.²⁰

At the same meeting, the Defence Planning Committee also indicated that, in the future, the Alliance would also stress "crisis management" to a larger degree than in the past. To contribute to crisis management will require forces with greater flexibility of employment able to demonstrate Alliance cohesion, resolve, and capabilities, but in an unprovocative and tempered approach. Multinational formations, perhaps smaller than at present and possibly organized along functional capabilities, will constitute an essential supporting element of this new NATO approach to resolving or, preferably, averting crises. At the same time, such multinational forces would also have considerable political value from the perspective of defending German territory in the short term, and common Western interests on a wider scale, in the mid- to long-term. Not to be forgotten, however, is the fact that smaller standing allied national forces will require NATO to adopt a unique degree of cooperation among its members, obliging standardization, interoperability and alterations in the current wartime command structure. All of these issues must be

considered in the development of the new operational concepts for the defense of the Central Region.²¹

In terms of ensuring German security, the rapid reinforcement of eastern Germany by the allies of numerous nationalities could serve as a major deterrent force. While the ACE Mobile Air and Land Forces are available, their *raison d'être* heretofore has been to demonstrate Alliance resolve on the flanks in the event of intimidation, and they lack sustained operational capabilities. A multinational Rapid Reaction Corps, as well as other multinational augmentation forces, on the other hand, would provide not only a message of political solidarity, but also credible military capabilities.²²

Some nations have questioned (more on a political than military basis), however, whether a corps-sized formation is the appropriate vehicle for the multinational, rapid reaction forces. For example, according to press reports, Bonn strongly lobbied its NATO allies prior to the May 1991 meeting of the Defense Planning Committee to reconsider adoption of a Rapid Reaction Corps. Bonn argued that in a politically delicate crisis (e.g., a crisis calling for NATO reinforcement of eastern Germany), fitting an appropriate alliance response to the particular crisis, both physically (i.e., the size of the force) and psychologically (i.e., a "crisis reaction task force," *vice* an "army corps"), will be important in the development of future operational concepts.²³ The Germans, however, were not successful and the new Franco-German initiative for a smaller European multinational corps (approximately 35-40,000 personnel) under the control of the Western European Union may indicate that the debate has been reopened.²⁴ If the United States wishes to influence this debate, as well as the debate over the extent of a future "European Defense Pillar" which lies just below the surface, then the United States may have to make a significant commitment to the rapid reaction forces of the Alliance.

But the United States has not yet announced its final intentions concerning participation in the Rapid Reaction Corps and needs to consider seriously the contribution it may make to the organization emerging as the keystone organization of future NATO forces in the Central Region. If the

United States is content to furnish only intelligence, logistics, or strategic lift assets to the Rapid Reaction Corps, then it may be able to exert only a passive or negative influence on the future employment of rapid reaction forces; i.e., deny access to key intelligence systems and information, logistics capabilities, or transportation assets.

On the other hand, if the United States desires a more positive role in the development and potential employment of rapid reaction forces, then it will undoubtedly have to bring combat forces to the negotiating table. From a practical standpoint, only those nations which contribute substantially to the combat power of the Rapid Reaction Corps and, therefore, share the risks will be able to influence meaningfully the development of the forces, or advocate effectively for their employment. Therefore, if in the future the United States wants to be able to lobby convincingly for the employment of the rapid reaction forces, supplying intelligence, logistics support, or strategic lift will not necessarily be enough; a commensurate investment in combat formations will be required.

Whether a sufficient level of commitment will be made remains to be seen. At the close of the May 1991 meeting of the NATO Defense Planning Committee in Brussels, Secretary of Defense Cheney indicated that the United States might offer a heavy division based in the United States.²⁵ As yet, no final decision has been reached; however, Admiral William Smith, U.S. Military Representative to the NATO Military Committee, indicated that the United States is considering whether "probably one of the Reserve divisions could be called up, if necessary, and provided to the Rapid Reaction Force."²⁶ While the prospect of providing a heavy division is laudable, the United States may wish to reconsider assigning a division from the reserve forces, which may not be able to meet the reaction time lines anticipated for the Rapid Reaction Corps (roughly 5-7 days).²⁷ Additional forces, such as an aviation or field artillery brigade or an armored cavalry regiment might also merit consideration for inclusion in the U.S. commitment to the Rapid Reaction Corps.

The United States has, however, indicated that American ground forces remaining in Europe will take part in the

multinational corps organizations being developed.²⁸ This participation will challenge U.S. Army planners as they attempt to integrate allied forces into the U.S. doctrinal system. But these difficulties can be overcome, as the example of the relationship between the U.S. VII Corps and German 12th Panzer Division over the past decade demonstrates.²⁹ However successful this one relationship, it must be recognized that it was built over 10 years and accomplished on a smaller scale than anticipated in future multinational formations. More importantly, integrating a U.S. division into a multinational corps will present even greater difficulties. Under current doctrine, a U.S. Army corps is designed to fight as an entity. Combat assets (e.g., armored cavalry, field artillery, aviation, air defense artillery) and combat support units (signal, intelligence, military police, etc.) are concentrated at corps to allow the corps commander to mass fires and combat power at key, but shifting, points across the depth and breadth of the battlefield to influence the outcome of battles and the overall campaign.³⁰ Sufficient assets are not available to provide for this flexibility and support to both the corps and an independent division that might be separated by hundreds of kilometers.

Similar conditions apply to combat service support assets. In the 1970s, the U.S. Army consolidated most combat service support (i.e., personnel and logistics) functions to improve command and control and to contribute most efficiently to the application of combat power at decisive points of the battlefield.³¹ At the same time, while an armored or mechanized division can sustain itself for limited periods, it relies on the corps for prolonged support.³² Whether current levels of organization are sufficient to provide adequate support to a division operating away from the corps and still maintain the cohesive striking power and sustainment capabilities of the corps remains an open question. Without increased force structure and the resources required to equip it to support the attachment of a U.S. division to a multinational corps, it is possible that the combat capabilities of the parent U.S. corps might be weakened or the separate division might not have sufficient assets to accomplish its mission in the most effective manner.

Conceivably, reliance on multinational formations might push the U.S. Army toward force structures and doctrinal employment concepts that emphasize independent, self-sustaining divisions or even brigades. Such an approach might fit well with potential partners in multinational corps. Belgium has long relied on the brigade concept and Germany is in the midst of refining its force structure design and the doctrine necessary to support it and is focusing efforts at the divisional level.³³ Such a move on the part of the U.S. Army, however, flies in the face of past experience and recent combat experience that recognizes that brigades and divisions must be agile, streamlined organizations that allow maximum operational mobility and striking power. Occasionally turning doctrine on its head can provide stimulus for positive change, but this is not the time to overturn a demonstrably capable doctrine.

Factors Affecting NATO Operational Concepts.

In a future operational level campaign, combat along the main axes of advance will likely see little decrease in intensity from today. At decisive points of contact the term "thinned out battlefield" will be meaningless, as the levels of forces will vary little from today. The level of intensity at key points of decision, again validated by experiences in Operation Desert Storm, may be even greater because of the increased importance of individual engagements to the overall success of a campaign. Additionally, expanding ability to mass fires over long distances, combined with increasing lethality of modern munitions, will make the battlefield an extremely intense place.

In the wake of German unification and the return of Soviet forces, it quickly became obvious that the long standing NATO strategy of "Forward Defense" and the operational concept based on a "Layer Cake" of national corps defending along the Inner German Border were no longer appropriate. The question remains, nonetheless: what concept should fill the existing vacuum?³⁴ On the one hand, some might argue for transferring "Forward Defense" and the "Layer Cake" to the new German border and adapting it to new force structures as necessary. Given recent announcements on force structure

cuts, reductions in readiness rates, foreign troop withdrawals from the Federal Republic of Germany, and promised introduction of multinational formations, this option does not appear feasible (at least on the scale of the past). That said, an operational concept that relies on a defense concentrated forward along Germany's new borders, but with fewer participants, might be possible. Conversely, planners could rely more heavily on the operational level maneuver of forces. In this case, the density of the initial defense along the Oder-Neisse could vary considerably: from a robust defense well forward to light screening forces along the border supported by strong, operationally mobile reserves. Although such operations have been practiced recently, notably in the Central Army Group, a campaign based on such a concept has not been practiced previously throughout Central Europe and is dramatically different from a General Defense Plan type defense along the Inner German Border.³⁵ Reliance on such a concept would call not only for new plans, but also for fresh patterns of operational thought.

What planners must realize, however, is while "Forward Defense" and the "Layer Cake" are no longer politically viable, neither is a defense based on light screening forces forward that yields territory, wears down an opponent, and allows for the decisive commitment of operational reserves to defeat an attacker. While such a concept is certainly militarily feasible, traditional political restrictions that have always constrained NATO military planners in the Central Region have not gone away. Political exigencies will dictate that NATO military forces must defend the territorial integrity of the Alliance. Consequently, members of the Alliance will be loathe to see a highly destructive campaign carried out on *their* soil. Secondly, in the past, neither Germany nor NATO appeared willing to trade Hamburg for time. That the Alliance or the Germans will be willing to trade Berlin (scheduled to become the German capital) for time is highly suspect.

The preceding discussion does not argue for operational rigidity imposed by a strict reliance on a static defense along the Oder-Neisse. Battles of tactical maneuver and a campaign concept based more on operational maneuver will undoubtedly

emerge. Rather, the observation merely serves to point out that in the attempt to jettison "Forward Defense," we must not go to the other extreme. The best approach is to combine the defensive advantages of the new terrain with adequate operational level reserves.

Terrain.³⁶

Terrain obviously plays a significant role in the success or failure of a campaign. In developing a future plan for the defense of the Central Region, NATO planners must consider new terrain conditions resulting from German unification. For example, the Oder-Neisse rivers, the conurbation of Berlin, the Elbe River, the urban sprawl of the Leipzig-Dresden-Halle-Magdeburg corridor, the terrain between the Elbe and the Oder-Neisse rivers, and the acquisition of an enlarged Baltic coastline will play critical roles in the developing future concepts of operation.

Intuitively, the Oder-Neisse river line offers an excellent defensive position and, for the first time, NATO planners in the Central Region will have a substantial natural barrier that can be incorporated into an initial defense. Unfortunately, at present, little detailed information is available on the characteristics of this obstacle, constraining full and effective use of its defensive potential. Certainly German and Soviet experiences in World War II provide initial insights for both an attacker or defender. As is obvious, the longer NATO forces can deny a crossing of the Oder-Neisse, the better. This observation does not imply planners should rely solely on a heavy, forward defense based only on retaining a line along the Oder-Neisse. Rather, the river line should be used to the maximum extent consistent with operational plans to deny a potential opponent access to NATO territory.

Should an opponent gain a substantial foothold across the Oder-Neisse, the obstacle value of the rivers can still help shape the battlefield to NATO's advantage by using the river lines to delay and disrupt an opponent's reinforcing operations into eastern Germany. Consideration should be given to the requirements necessary to use the obstacle to delay, disrupt, and, preferably, destroy reinforcements following the leading

elements of an attack. The limited number of crossing sites would offer lucrative targets for allied interdiction efforts. For the foreseeable future, Joint Precision Interdiction (JPI, a further evolution of Follow On Forces Attack [FOFA]) offers the best means for accomplishing this task and should be incorporated into future operational concepts. Additionally, as ground forces modernize, attack helicopters or tactical missile systems, such as the U.S. Army advanced tactical missile systems (ATACMs), should be integrated into interdiction efforts.³⁷

For operational purposes, the area immediately east of Berlin and west of the Oder-Neisse line is key terrain. Control of this terrain allows an attacker to use it as an operational pivot point for a last minute switch in the main effort to the north or south of Berlin. Additionally, an opponent could use the conurbation of the greater Berlin area to screen his maneuvers from NATO observation or a ground counterattack. Militarily, failure to control this area translates into a risk of defeat in detail or being cut off by a turning movement and, therefore, plans for controlling this key terrain must be incorporated into a future defensive concept.

The area north and northwest of Berlin consists of a web of water obstacles, marshes, and forests that generally lends itself to delay and defensive operations. These obstacles would constrain an attacker from operational mass or maneuver. Moreover, attacks into this region provide an aggressor with less flexibility at the strategic level, as it canalizes an attacker away from the heartland of Central Europe. At the same time, however, similar constraints beset a defender. Little suitable terrain exists to support operational level counterattacks, largely because of inadequate shoulder room for the employment of large formations (i.e., corps). Additionally, considerable obstacles in the area could delay counterattack forces and rob a counterattack of momentum. Extensive waterways and marshy terrain in many locations could hinder resupply and reinforcement operations. These observations are not intended to imply operations in this area are out of the question, but only to point out obstacles inherent in attacking or defending the region.

The greater Berlin area will also influence operational planning. Berlin essentially divides in half a potential NATO defense of eastern Germany. The command and control difficulties posed by this situation may force planners to develop one command and control system for the battle north of Berlin and a second for the battle south of the city, as well as a possible third headquarters to control arrival and disposition of operational reserves or additional augmentation forces. Furthermore, when combined with the waterways and obstacles immediately to the west, the city inhibits the operational maneuver of forces from north to south (or *vice versa*), thus greatly constraining NATO operational options. At the same time, this area does not provide suitable assembly areas for operational level reserves. Planners may find it difficult, therefore, to position an operationally significant force that could provide sufficient flexibility to counter a move north or south of Berlin. These conditions effectively preclude a large scale, operational level attack being carried out from the center of a NATO defense until well west of the Elbe River.

Better suited for operational level maneuver, the area south of Berlin favors an attacker moving from east to west. Little operational depth exists for a defense between the Oder-Neisse and Elbe Rivers and NATO forces would have limited maneuver room to shape the battlefield. Moreover, NATO forces would likely be circumscribed from defending further to the west to extend operational depth: politically, it would be difficult to surrender extensive amounts of German territory and militarily, possession of the Elbe River crossings provides an attacker with considerable operational and strategic flexibility while complicating a defender's efforts to retake lost ground. At the same time, while an attacker may be canalized between Berlin and the built up area to the south along the line Dresden-Leipzig-Halle, the urban sprawl of both areas also constrains the space through which a defender could counterattack. Indeed, NATO forces might be forced to attack head on into a penetration—a technique historically not given to success. NATO planners may, therefore, have to devote considerable study to the terrain in this area to develop an operational concept that permits a counterattack against the flank or rear of a penetration.

Further south of Berlin, the Erz Mountains offer some protection against possible flanking operations into eastern Germany through the northern portion of the Czech and Slovak Federal Republic. On the other hand, the mountain range also offers lucrative opportunities for air interdiction to delay and disrupt NATO reinforcement and sustainment operations south of Berlin. Additionally, the area constrains the operational level of movement of NATO forces from the southwest into the primary area of operations in eastern Germany.

Instead of attacking through the Erz Mountains, an opponent could use the mountain range to screen an approach to southern Germany along the traditional invasion corridor through Czecho-Slovakia to Bavaria. Although some have relegated this approach to secondary status, NATO planners cannot ignore this still dangerous approach that could turn the flank of the entire defense of eastern Germany. Fortunately, NATO planners are well-acquainted with this area and plans already exist. Nonetheless, planners will have to adapt existing plans best to match the terrain with future operational requirements and available forces.

Finally, the dramatic political changes that have occurred in the Baltic region during the past 2 years have markedly changed the operational situation in that area. German unification has added 250-300 kilometers of shoreline that will now likely form the northernmost shoulder of Allied Forces Central Europe (AFCENT). This situation will probably add operational requirements to defend the coastline and air space well out into the Baltic Sea.³⁸ At the same time, German unification, establishment of a non-Communist government in Poland and withdrawal of Soviet groups of forces, announced Soviet reductions in naval infantry in the Baltic Region, and the independence of the Baltic States have made a NATO defense of the Baltic a much less complex problem. The amount of Russian controlled coastline has been reduced to a pittance and airfields proximate to the Baltic may be few in number. These conditions have also increased the amount of hostile waters through which an opponent's amphibious or maritime force would have to pass, thus easing NATO defense

requirements and offering NATO planners considerable operational flexibility.

New conditions in the Baltic also offer NATO military planners a wide variety of operational options in defense of the Central Region. For example, German Naval Air Arm Tornados, currently based in Schleswig-Holstein, could be forward deployed to counter maritime or air operations as the situation demanded. Or, it may now be possible to introduce naval or amphibious forces into the Baltic Region in support of a true combined, tri-service campaign in the Central Region. At the same time, the current vacuum in the Baltic has opened a gap in the integrated air defense of the former Soviet Union and its surrounding sea and air space. In the event of hostilities, NATO air forces could take advantage of this situation. In the absence of a significant threat to southern Norway or the Baltic Approaches, for example, Norwegian or Danish F-16s from AFNORTH could be forward deployed into the Central Region to conduct air defense operations further to the east. Aircraft from U.S. carrier battle groups could also contribute to the air defense of the Baltic.

Operational Level Reserves.

Reliance on operational level maneuver requires decisive operational level counterattacks to defeat enemy penetrations and to restore the territorial integrity of the Alliance. This requirement, in turn, necessitates establishment of sufficient operational reserves to blunt and then decapitate a penetration. In the past, when NATO planners had to cope with an ACE-wide Soviet attack across the breadth of the Central Region, NATO was not able to generate sufficient operational reserves. In the future, where it may be possible to establish such forces, and an opponent will no longer be able to attack in strength across the entire Central Front, NATO planners must integrate such operational level reserves into a campaign plan. The size and capabilities required of these operational reserves deserve more detailed study as campaign concepts are developed. Consideration should be given to using at least one, if not two, corps in the counterattack role.

With announced and anticipated plans for national force reductions within Central Region, NATO planners must still plan for economy of force operations that will allow for creation of operational level reserves capable of executing countermaneuver operations against an opponent's main thrust. Because an attacker may no longer be able to attack in strength across the breadth of the Central Front, battles outside the main axes of advance may be markedly different from today and could permit economy of force operations on a scale larger than in the past. This conclusion does not infer that battles will be easier in the sectors chosen for such operations, but acknowledges risks will have to be taken somewhere if NATO is to generate the operational reserves necessary to support operational maneuver.

To carry out economy of force missions and establish requisite reserves, it will be essential to discern rapidly the point of an opponent's main effort. To do so, NATO must maintain adequate reconnaissance, surveillance, and target acquisition (RSTA) capabilities to permit commanders to "see" the evolving battlefield at the strategic and operational levels and gain adequate time to plan for and execute countermaneuver operations. As Operation Desert Storm graphically illustrated, the commander (be he at the strategic, operational or tactical level) who cannot "see" and react in time faces catastrophic defeat. At present, however, not all NATO nations possess adequate RSTA capabilities. To correct this shortfall, the United States must ensure sufficient integration and distribution of information to its allies. As importantly, measures will have to be taken to ensure sufficient flow of information to U.S. units operating in multinational formations. Again, because of the structure of a U.S. corps, this may be a complex undertaking. Obstacles can be overcome, but will require establishment of adequate liaison channels and procedures. And, given the relative importance of RSTA, these tasks deserve priority attention.

The positioning of operational level reserves undoubtedly will play a key role in their availability and effectiveness. Because of terrain and space limitations, however, planners face difficult choices for the initial disposition of forces slated

for the operational level reserve mission. Maximum operational flexibility could be achieved if forces were initially assembled west of the Elbe River. On the other hand, these reserves would have to move long distances prior to commitment, and undoubtedly would be subject to air attack. Additionally, because of the distances involved, early (perhaps too early) decisions on the eventual deployment of the operational reserves might be required. Finally, positioning reserves west of the Elbe River would require giving up substantial amounts of territory before a decisive counterblow could be launched.

To reduce movement times, planners could opt to pre-position operational reserves, perhaps prior to the outbreak of hostilities, in the area of greatest anticipated threat. While offering the most rapid deployment of operational reserves, operational flexibility would be greatly inhibited under this option and might involve considerable risk. For example, a potential opponent, using the advantages of the terrain surrounding Berlin, could postpone a decision to commit his main effort either north or south of Berlin until after NATO had committed its reserves. Worse still, reserves might be positioned on the wrong approach from the outset of a campaign. A third alternative might be to split available forces to provide operational reserves—albeit smaller—north and south of Berlin. But to paraphrase Frederick the Great: to have reserves everywhere is to have reserves nowhere.³⁹ Under such an option, NATO commanders might find themselves with insufficient reserves in either area, but more importantly at the point of an opponent's main effort. Thus, while some operational level reserves might be available both north and south of Berlin, piecemeal commitment might serve no useful purpose.

Operational Level Movements.

Current planners have compiled a large base of knowledge on movement of forces to support existing plans. However, those plans were relatively simple compared to future requirements. In the past, for example, most movements in the Central Region consisted largely of west to east traffic in clearly defined national corridors to respective general defensive

positions. In the future, movements will be not only west to east, but also north and south, on a scale not heretofore experienced in the Central Region, and toward positions in eastern Germany that may not have been identified or developed prior to the outbreak of hostilities.

Movement distances, prior to and after the outbreak of hostilities, will be much further than at present. All nations likely to participate in the defense of the Central Region have announced plans to reduce substantially forces stationed in Germany. Thus, forces available for a defensive campaign will largely be based on home territory, thereby lengthening movements. Additionally, defense of a unified Germany must now consider the territory up to the Oder-Neisse, extending movements an additional 250-300 kilometers. After the outbreak of hostilities, movement requirements in support of operational maneuver/countermaneuver will be greatly extended over today.⁴⁰

The capacities required to meet these requirements are not yet fully known. As recent experience in the Gulf War revealed, considerable resources are required to support operational movement. Several participants—who would also field forces in the Central Region—have indicated that shortfalls existed in their ability to support large scale operational movements during Operation Desert Shield/Storm.⁴¹ NATO planners, in the development of their operational campaign concept, must recognize these deficiencies and eliminate shortcomings or reduce any adverse effects on operations.

Airmobile Operations.

One option under consideration, particularly at Allied Forces Central Europe (AFCENT), is the increased use of helicopters to improve operational mobility, and several nations are emphasizing doctrine for the employment of airmobile forces.⁴² For instance, *Die Welt* reports that the *Bundeswehr* is intent upon raising a contribution to the proposed NATO Rapid Reaction Corps which will include three army brigades (airmobile, airborne and mechanized) plus four Luftwaffe air squadrons and air defense units.⁴³ The Belgian government has also decided to increase the Paracommando

Regiment to an airmobile brigade.⁴⁴ Thus, the trend is toward developing airmobile capabilities, employed to stabilize the attacked front, and supported, if needed, by follow-on heavy mechanized forces to reestablish the *status quo ante*.

NATO and U.S. planners must also recognize that while helicopters provide considerable tactical and operational mobility, there are constraints on employment of airmobile forces. First, to provide rapid movement, sufficient numbers of aircraft must be purchased. If insufficient numbers are procured, shuttle operations may be required and may actually take longer than ground movement. Whether, in the times of constrained defense budgets, nations will be able to purchase the requisite numbers of helicopters remains to be seen. Second, with the exception of attack helicopters, airmobile forces are predominantly light infantry and, therefore, are ill-equipped to take on heavy forces unless properly augmented and given adequate time to prepare defenses. However, in the first instance, if heavy augmentation forces are available, they would be used in the first place. In the second instance, it is unlikely on future, fast-paced battlefields that airmobile formations will have sufficient time to prepare unless their movement and employment are decided early in the campaign—perhaps too early for them to be in the right place at the right time. Finally, weather conditions in Central Europe are not always conducive to the conduct of airmobile operations and operational plans should not be tied to an airmobile force that, literally, may not be able to get off the ground. Use of helicopters should not be excluded, but operational level planners must carefully balance the capabilities and constraints of such forces as they are integrated into the campaign.

Air Campaign.⁴⁵

Any future conflict in the Central Region will depend on a closely integrated, joint and combined air-ground campaign. Equally true is that with reduced air and ground forces in the region, air combat power will take on added importance for attacker and defender as each attempts to exploit fully the capabilities inherent in aerial weapons systems. Full

integration of air forces into a coherent campaign will present numerous challenges if planners are to maximize NATO's capabilities, while minimizing an opponent's.

Under the CFE Treaty, the NATO ceiling for Fixed Wing Combat Aircraft (FWCA) is set at 6,800 FWCA. NATO nations, however, currently hold roughly 5,700 such aircraft. In an era of shrinking defense budgets, it is not likely that nations will maintain current levels of FWCA. Indeed, several nations within the Central Region have indicated intent to substantially reduce combat aircraft.⁴⁶ With reduced numbers and increased reliance on multi-role aircraft, but essentially the same level of commitments, NATO planners face difficult decisions in the apportionment and allocation of air forces. Undoubtedly, attaining the proper mix of reconnaissance and surveillance, counterair, and offensive air support will require considerable debate as NATO planners develop their operational concepts and plans. Some key points to consider during this debate include the following.

Aerial surveillance and reconnaissance will take on greater importance because of the need to identify major operational threats and allow sufficient time for NATO forces to counterconcentrate and counter maneuver. A requirement will also exist to shift additional surveillance and reconnaissance assets from the strategic to the operational level as the campaign unfolds. As amply demonstrated during air and ground operations in Operation Desert Storm, reconnaissance and surveillance play an increasingly critical role in modern warfare and commanders at all levels in the Gulf War expressed a need for increased reconnaissance.⁴⁷ In the current budget cutting underway in many NATO capitals, however, existing levels of reconnaissance aircraft are unlikely to be maintained.⁴⁸ This trend may deserve reconsideration as NATO military planners digest the insights derived from the Gulf War. Conversely, nations may wish to consider the acquisition of space based reconnaissance and surveillance assets or the use of remotely piloted vehicles to compensate for the loss of reconnaissance aircraft.

Counterair operations will play a vital role in a future campaign in the Central Region. Indeed, establishment and

maintenance of a favorable air situation is the *sine qua non* of modern combat. Nowhere will this be more true than in the Central Region, where a NATO campaign based on the maneuver of large scale forces across significant distances will make establishment of a favorable air situation a prerequisite. Counterair operations are, therefore, fundamental, not only for air operations, but also as an integral component, and key determinant, of the entire campaign. Because of the importance of counterair operations, the key elements and issues will be discussed in some detail. Counterair operations take two basic forms. First is defensive counterair (DCA), the interception and destruction of aircraft in the air, preferably before they engage their targets, using air defense interceptors and surface-to-air missiles (SAMs). Second is the destruction or degrading of elements of an opponent's integrated air operations systems (command and control, SAMs, airfields, etc.), otherwise known as offensive counterair operations (OCA).

The mix of offensive and defensive air actions will vary over the course of a campaign. During heightening tensions before the outbreak of hostilities, maximum effort would likely be devoted to DCA, as well as the first few hours, perhaps days, after hostilities have broken out. Once hostilities commence, it will be important to reduce an opponent's effective sortie generation rate and some assets must shift from the DCA to the OCA role. Given the high number of targets, the need to penetrate enemy air space and the vulnerability of attacking aircraft to air and ground based air defenses, targeting still will have to be selective and priorities established. At the same time, it would not be possible to attack all airfields simultaneously. Therefore, until OCA operations demonstrate adequate effectiveness, considerable DCA efforts may be required.

The new circumstances in Central Europe will also affect an OCA campaign. In the past, NATO and the WTO confronted each other in the Central Region along the Inner German Border and OCA targets were within relatively easy reach of each other (i.e., West Germany, East Germany and western Poland). With the unification of Germany and the withdrawal

of all Soviet forces by 1995, this situation no longer pertains and NATO military planners will face new operational conditions. For example, by 1995 an "aerial buffer zone" may emerge. The breadth of this "buffer zone" may depend on the degree to which NATO decides to use the newly acquired air bases on the territory of the former German Democratic Republic and the extent to which an opponent might seize or occupy bases in Poland or CSFR prior to the outbreak of hostilities against NATO.

Clearly some operational and tactical advantage accrues to each side in occupying these air bases, but the operational risks also deserve careful consideration. The majority of bases in eastern Germany, for example, are close to the Oder-Neisse, some within long-range artillery or rocket fire, and could be neutralized relatively quickly after the outbreak of hostilities. At the same time, being so close to the border, they would provide lucrative targets for an opponent's OCA effort. Similar logic applies to hostile use of air bases in Poland, where many airfields are located in the western portion of the country. An opponent may feel compelled to use these bases, nonetheless, because of the range limitations of many ground support aircraft; thus, presenting NATO air forces with lucrative OCA targets.

Even should some airfields be used in eastern Germany and Poland, the majority of remaining air bases are likely to be separated by greater distances than in the past. Thus, NATO aircraft traditionally assigned OCA missions would, in the future, be able to reach fewer targets. As a result, initial NATO OCA operations may focus on targets more easily reached, i.e., close air support aircraft or other assets that might be forward deployed in Poland or CSFR. On the other hand, the relative paucity of OCA targets for each side may result in an OCA campaign of lower intensity in the early stages of a future conflict, at least, than heretofore anticipated. Alliance planners, therefore, may wish to consider initially weighting DCA operations more heavily than OCA operations, as well as concentrating initial OCA efforts against close air support bases.

Because of the new distances involved, military planners also need to consider means of "closing the gap" between ranges of NATO aircraft and potential OCA targets. The most obvious alternative is to acquire aircraft with longer ranges. But, this option is time consuming, expensive, and unlikely to appeal to Western nations intent on reaping the "peace dividend." The perilous state of current acquisition programs throughout Europe and the United States is a reflection of this trend.⁴⁹ Reduced payloads is another option, but again holds little appeal. The use of "gas and go" operations at forward airfields may have some potential, but may reduce sortie generation below acceptable rates.

As recently demonstrated in Operation Desert Storm, in-flight refueling offers a further means of extending ranges. However, this lesson should not be overdrawn. Refueling operations in the air campaign against Iraq were carried out in a relatively benign environment when compared to a possible conflict in the Central Region. Moreover, existing air refueling assets, while adequate for the operations against Iraq, may not be equal to the demands of future campaigns in the Central Region. The cost of purchasing additional refueling aircraft may also be prohibitive in an era of restricted defense spending. The foregoing discussion is not meant to close the option of air-to-air refueling, particularly in a NATO context where expenses can be carried by all principals, as in the case of the NATO AWACs program. It serves only to highlight pros and cons that deserve serious consideration.

Perhaps the most promising means of extending ranges of NATO aircraft is through the further development and acquisition of long-range stand-off weapons. Guidance, propulsion and warhead technologies provide for extended range, increased accuracy, and greater destructive power. Again, the lessons from Operation Desert Storm should not be overdrawn, but similar systems have proven their worth.⁵⁰ As importantly, stand-off weapons offer increased protection for aircraft and crews. Delivery aircraft would not be exposed to the terminal defense at or in the vicinity of their targets. Penetration distance could be substantially reduced, exposing crews and aircraft for shorter times. Moreover, flight routes

could be chosen to reduce ground based air defense coverage. Finally, many existing conventional missiles have low observation capabilities that could be reinforced with "stealth" technology providing a higher probability of reaching their targets.

Offensive Air Support operations will also play a key role in the defense of the Central Region. Recent experience in the liberation of Kuwait validated the critical importance of air support of ground operations. Given anticipated force levels, it appears likely that NATO will continue to rely extensively on offensive air support to compensate for reductions in ground forces. Paradoxically, however, dedicated ground support aircraft are among the first casualties as nations attempt to pare down their defense budgets.⁵¹ Granted, many NATO air forces have indicated that greater numbers of existing multi-role aircraft will assume the ground support mission. Nonetheless, given the number of aircraft available to perform the number and diversity of missions, a tension may exist over how best to employ scarce resources. While no easy solution to this dilemma is on the horizon, attack helicopters, MLRS, ATACMs, or a new deep attack system could assume some of the missions currently performed by close air support aircraft.

Required *ground based air defense* capabilities are unlikely to decrease in any future campaign in the Central Region. Current Soviet doctrine places considerable emphasis on the critical importance of air power in an operational and strategic campaign. Air operations are intended to range throughout the depth of the battlefield and beyond to destroy opposing aviation assets, operational and strategic reserves, and military and economic power, as well as disrupt an opponent's operational and strategic movements.⁵² While NATO air defense interceptors will play a key role in defending against attacking aircraft, it is unlikely that sufficient numbers will be available to provide 100 percent coverage at all times. Thus, if NATO is to carry out air operations—as well as operational level maneuver of ground forces—without being unduly hampered by opposing aircraft, sufficient ground based air defense capabilities are essential. That said, adequate levels of ground based air

defense have always been problematical for NATO and the situation is not anticipated to ease in the foreseeable future.⁵³

Regardless of the eventual numbers of ground based systems available, additional points must be considered. First, these systems must have sufficient mobility to provide air defense coverage for large scale forces on the move. Existing and largely immobile air defense belts will not likely suffice to protect the maneuver force. New systems with requisite operational mobility will be needed. Second, the interoperability of the various national employment doctrines and command and control systems, as well as the effective integration of the low-mid-high air defense systems must be ensured. Third, an effective system for identifying friend or foe (IFF) must be developed. The current situation, epitomized by the cynicism "shoot 'em all out of the sky and sort 'em on the ground," cannot continue.⁵⁴ Resolution of this long-standing issue should be high on future planning priorities. These requirements pose no easy solutions, but, as was demonstrated so forcefully in the Persian Gulf, the creation of an adequate ground based air defense capability should have a high priority in post-1995 operational planning.

Command and Control.

Future Major NATO Command and Major Subordinate Command structures are currently under intense examination throughout the Alliance and will not be addressed here. Suffice to say, the unification of Germany and the restructuring of many national forces will complicate command and control arrangements at the operational level. At the same time, operational level planners will be constrained in devising new command and control arrangements until various NATO organizational studies have been completed. That said, operational level planners should be concerned about command and control arrangements besides the number and type of headquarters. First, ground space management will become increasingly more complex. The number of forces deployed, the movements required, and limited maneuver space will affect future NATO operational plans. Additionally,

due to an increased reliance on lateral movements, lines of communication—both unit and national—will overlap.

The current reorganization of national forces underway in the Central Region, particularly consolidation of the *Bundeswehr* Field Army and Territorial Army (which provides a great deal of the host nation support, rear area security, etc., in the Central Region), further exacerbates planning difficulties, at least for the short term. Granted, many coordinating agencies and conventions already exist to assist in resolving of these issues; nonetheless, planners must take a long, hard look at current organizations and procedures to assess relevance for future campaigns. New NATO agencies to assist in the planning and support of anticipated operations may be required.

Second, as recent air operations in Operation Desert Storm underscored, the complexity of air space management under modern conditions also presents considerable challenges to allied planners.⁵⁵ And, it must be stressed, only coalition aircraft were in the skies. In any future conflict in the Central Region there will be a large number of opposing aircraft that will complicate matters considerably. And, as in ground based air defense, NATO must also solve its problems with identification of friend or foe in air-to-air combat.

Today, fast paced operations are the norm. Future technological advances will accelerate operational tempos and further reduce time available for decision making at all levels. As a result, commanders and planners will have to make decisions rapidly, and, perhaps, quite early in a campaign. Future operational planners must ensure, therefore, that adequate reconnaissance, surveillance, and target acquisition capabilities exist to identify an opponent's intentions and that command and control networks are capable of swiftly disseminating information (as opposed to data) in sufficient time for commanders to respond to a rapidly changing situation.⁵⁶

Combat Support.

The combat support capabilities necessary to undergird the emerging reliance on large-scale maneuver must be more fully developed. NATO planners will have to emphasize areas that have been traditionally neglected in many NATO armies. For example, as indicated earlier, air defense coverage at corps and division level must be increased. Similarly, many nations within NATO's Central Region may have to increase their mobility/countermobility capabilities.⁵⁷ Further attention should also be devoted to fulfilling the potential of combat helicopters. Finally, further development of longer range missile systems (e.g., ATACMs) with precision guided munitions that can support cross-corps operations will also have to be incorporated into future operational plans. The difficulties inherent in implementing these programs in an era of shrinking defense budgets will be substantial, and will be significantly exacerbated by increasing reliance on multinational forces.

Combat Service Support.

Likewise, combat service support capabilities need to be improved. As demonstrated in Operation Desert Storm, combat service support assets require operational mobility (cross country mobility, speed, protection, etc.) equivalent to the systems and units they support. At present, these capabilities do not exist in all NATO forces. Indeed, operational mobility is constrained currently because some units operate on a short logistical tether. While some individual division and, perhaps, corps movements are possible, it is questionable whether existing capabilities would prove sufficient for the mobility required for large scale operational maneuver over the extended distances anticipated. Whether these capabilities should be in the form of increased numbers of combat service support forces, pooling of national capabilities, more mobile assets, established area logistics networks, increased host nation support, or new concepts of logistics support will need to be explored in greater detail. At the very least, NATO military leaders should encourage nations to provide the transportation assets appropriate for adequate mobility of their formations.

Sustainability has always been a NATO problem. Any concept that relies significantly on large scale operational level maneuver or substantial rebasing of aircraft will tax an already overburdened logistics system. And, because logistics has and will likely remain a national responsibility, it is highly improbable that NATO military planners will devise a solution meeting the requirements of all the nations within the Central Region. Extensive reliance on multinational formations will compound these problems. Indeed, sustainment may prove the most intractable of the many new challenges facing NATO military planners as they attempt to fashion an operational concept that can be supported logistically.

Existing logistics networks and infrastructure must also be extended into the new territories. Initial indications are that the infrastructure in eastern Germany is not as highly developed as in the remainder of Central Europe and is in a state of disrepair after years of neglect.⁵⁸ Planners will have to identify shortfalls and upgrade and integrate eastern Germany into the existing NATO network. These efforts may be considerably complicated by the provisions of the September 1990 "Two Plus Four" Treaty governing the unification of Germany, where the access rights of the Alliance and Germany may require further clarification.⁵⁹ Suffice it to say Alliance planners face a number of challenges in discerning the impact of these issues on operational considerations.

Standardization, rationalization and interoperability and interchangeability have been contentious issues within the Alliance since its inception and will grow in importance in the near future. With fewer forces to perform more varied missions, greater flexibility required in employment, and increased reliance on multinational units, requirements for standardization and interoperability and interchangeability will undoubtedly increase. As these issues involve sensitive national interests (particularly national defense industries in a time of shrinking defense budgets), NATO military planners may face significant obstacles in standardizing forces. NATO's ACE Rapid Reaction Corps is a clear example of the difficulties involved in the interoperability of multinational forces. The British have been given command of this multinational

formation and will provide for the combat support and combat service support normally associated with corps sized forces. While the final composition of the ACE Rapid Reaction Corps has not been determined, it is highly likely that at least half a dozen nations will be involved.⁶⁰ How the British, who oftentimes possess unique equipment and doctrine, will support these national contributions or whether nations will retain the responsibility for logistics and how it will be accomplished on a modern battlefield remains to be seen. If NATO is serious, however, about relying heavily on multinational forces, these issues will have to be faced squarely and with greater dispatch than has been demonstrated in the past.

Conclusions.

That the strategic setting in Central Europe has been fundamentally transformed is without question. These new strategic conditions, in turn, have resulted in a sea change in operational requirements. But, the full consequences of these requirements are not yet known and considerable time may elapse before the situation is clarified. In the intervening period, operational planning will continue as military staffs come to grips with the complexities and requirements generated by the new strategic and operational conditions. In designing a future operational concept for the defense of the Central Region, NATO planners will have to break out of current modes of thinking. The rhythm of future campaigns will be different from today. Operational tempos will be faster and forces will operate day and night, largely without regard to weather conditions. Planning will become more complex as military staffs struggle with a wide range of diverse and ambiguous conditions. Old methods must be adapted and new skills and capacities acquired.

The U.S. Army can provide considerable assistance to its European allies in this endeavor. Over the past 15 years, the U.S. Army has undergone a similar (and sometimes painful) transformation, as it made the transition from the Vietnam War through the doctrine of "Active Defense" to "AirLand Battle" and its evolutionary derivatives. Much experience can be passed

on to our allies; many pitfalls can be avoided. To do so, the U.S. Army must remain actively engaged in discussions with our partners—formally and informally. Thus, tremendous dividends in the form of increased combat capability can be derived from relatively limited investments of time and resources.

A future reliance weighted more heavily on multinational forces presents both opportunities and challenges. More efficient use of limited resources, a more equitable burden-sharing of defense, and enhanced cohesion are certainly positive notes to be accentuated. On the other hand, the current divisive debate over the composition, roles, and leadership of the multinational corps may actually undercut solidarity in the short term. Moreover, unless nations make a considerable investment in improved interoperability, multinational forces may not be able to meet the emerging requirements for greatly increased operational level maneuver. The challenges inherent in ensuring adequate interoperability of such multinational forces will require considerable time, energy, and resources when all but time are in short supply. For the moment, and unless nations are prepared to devote considerable resources to their improvement, multinational forces provide more a political than military advantage.

Reliance on a multinational "Layer Cake" defense, similar to the long-held operational plans for the defense of the Inner German Border, is no longer feasible. At the same time, neither is a defense based on light screening forces forward that yields territory, wears down an opponent, and allows for the decisive commitment of operational reserves to defeat an attacker that turns eastern Germany into a future battle ground. Traditional political restrictions that have constrained NATO military planners in the Central Region have not gone away. NATO military forces will still have to defend the territorial integrity of the Alliance, whose members will be loathe to see a highly destructive campaign carried out on their soil. More importantly, in the past neither Germany nor NATO appeared willing to trade Hamburg for time. That the Alliance or the Germans will be willing to trade Berlin for time is highly questionable.

The preceding discussion does not argue for the imposition of operational rigidity by a strict reliance on some form of static defense along the Oder-Neisse. Battles of tactical maneuver and a campaign concept based more on operational maneuver will undoubtedly emerge. Rather, the observation merely points out that in jettisoning "Forward Defense," we must not go to the other extreme. The best approach is to combine the defensive advantages of the new terrain with adequate operational level reserves.

In designing the new operational concepts for defense of the Central Region, NATO military planners must consider the physical attributes of the eastern portions of Germany. These geographic circumstances will require considerable analysis to ensure full integration into a new defensive concept. In particular, the Oder-Neisse river line, the conurbation of Berlin, the Elbe River, and an expanded coastline deserve special attention and will shape emerging operational concepts. Of particular importance will be the question of how to use the existing terrain to shape the battlefield to permit execution of an operational level counterattack into the flank of a penetration.

Adequate operational level reserves represent a fundamental requirement if NATO planners are to rely extensively on maneuver warfare. Despite changes in the potential force ratios within the Central Region, NATO will not have sufficient forces to defend in strength everywhere. Thus, while an improvement over previous conditions, commanders will still have to carry out economy of force operations and accept a degree of risk in less critical areas to provide the operational reserves required for an adequate defense of the Central Region as a whole. The degree of acceptable risk has not yet been determined. Given current "force structure free fall" in the Central Region, sufficient forces may not be available to provide for adequate levels of operational reserves. Nations may have to reconsider the level of their forces as political and security conditions are clarified. In designating forces to be employed as operational reserves, American units, either in-place or reinforcing, offer forces highly suited for this role or for counterattacks. U.S. Army and

NATO planners should carefully consider assigning such missions to U.S. forces, while remaining cognizant of the political requirement for early commitment of U.S. forces to a multinational defense.

Employing operational reserves will depend to a high degree on the ability to move large units safely over considerable distances in a short amount of time. Indeed, before and after the outbreak of hostilities, operational level movements will considerably increase in scale and frequency, while time to execute such moves will be compressed. Few nations possess the transport necessary to effect such movements and considerable effort and resources may have to be expended to achieve the requisite capabilities. New procedures and organizations may also be required to coordinate the process. Host nation support requirements, particularly, will have to be refined. The unification of Germany, adding new territory to be defended, and the current restructuring of the German Field and Territorial armies further complicate an already tangled situation.

Means must also be found to provide adequate combat support and combat service support for such movements, as well as the forces themselves. Improved mobility/counter-mobility capabilities, better protection of the force on the move—particularly from air, long-range artillery or rockets, or tactical ballistic missile attack—and increased numbers of combat service support assets with operational mobility (cross-country mobility, speed, protection) comparable to combat units will be a prerequisite for large scale operational movements and maneuver. Finally, levels of sustainment will have to match requirements generated by such an operational concept.

The importance of air power in a future defense of the Central Region cannot be overrated. That said, anticipated reductions of NATO aircraft within the Central Region will present NATO planners with considerable challenges as they fashion a joint operational concept that effectively mates the air-ground campaign into the required synergistic whole. Apportionment and allocation of aircraft between the competing requirements of the various elements of air

operations—reconnaissance and surveillance, counter-air operations, and offensive air support—deserve considerable review. Based on Operation Desert Storm, it is apparent that future campaigns will require substantial reliance on airborne reconnaissance and surveillance systems. Indeed, Desert Storm reinforced the historical maxim that the commander who cannot "see" the battlefield is likely to suffer catastrophic defeat.

Within the counterair campaign, the competing demands of defensive and offensive operations also require resolution. The reduced numbers of ground based air defense assets and the increased need to provide protection for the movement of large scale forces may press for increased defensive counterair operations. At the same time, withdrawal of Soviet forces from Central and Eastern Europe may result in a decreased number of offensive counterair targets within effective range of NATO aircraft. Regardless of the outcome of the debate over counterair operations, it will be important to extend the effective range of aircraft and their associated weapons systems participating in offensive counterair operations.

Finally, a continued need exists to provide offensive air support to ground forces. This support will be required not only during initial defensive operations along main axes of advance, but also in support of economy of force missions and operational level counterattacks. The support required from air forces may be reduced somewhat as a result of the development or further refinement of ground support fire systems such as MLRS, ATACMs, or attack helicopters.

The revolutionary changes underway in the European security environment offer the Atlantic Alliance unprecedented opportunities—as well as considerable challenges—as the nations within the Central Region revise existing operational plans to conform to the changed strategic environment. These opportunities must be seized, and quickly, if NATO nations within the Central Region are to exert positive control over the development of future operational plans.

ENDNOTES

1. Press Communique S-1(90)36, London Declaration of a Transformed North Atlantic Alliance, July 6, 1990, and Final Communique of the Defense Planning Committee and Nuclear Planning Group of the North Atlantic Treaty Organization, May 29, 1991.

2. Otfried Nasseur and Daniel Plesch, "NATO Strategy Review: Out of Step with Events," *Armed Forces Journal International*, October 1991, pp. 51-52.

3. Final Communique of the Meeting of the North Atlantic Council, December 18, 1990.

4. *Krasnaya Zvezda*, December 7, 1991, 2d ed., p. 2 in *Foreign Broadcast Information Service (FBIS)*, JPRS Report, Arms Control, JPRS-TAC-92-002, January 14, 1992, p. 22. For background on this subject see Thomas-Durell Young, "Angst in Bonn: Securing Eastern Germany and the Disposition of the Soviet Western Group of Forces," *Strategic Review*, Vol. 19, No. 4, Fall 1991, pp. 75-80.

5. Edward Lacas, "Soviet Officers Say They Won't Go," *Independent (UK)*, October 14, 1991, p. 11.

6. This question presumes, of course, full implementation of the CFE Treaty, full compliance with the CSBM regime, and withdrawal of Soviet forces from Central and Eastern Europe.

7. That is, 20,000:13,150 battle tanks; 20,000:13,175 artillery pieces; 30,000:20,000 armored combat vehicles; 6,800:5,500 fixed wing combat aircraft (includes land based naval aircraft); and 2,000:1,500 combat helicopters.

8. Barbara Starr, "Winners and Losers in the NATO CFE Shareout," *Jane's Defence Weekly*, July 6, 1991, p. 19.

9. Germany will retain 26 of its current 48 brigades, of which only 6 will be composed of active battalions. Heinz Schulte, "Bundeswehr Reorganization: Making a Whole of Two Halves," *Jane's Defence Weekly*, June 1, 1991, p. 914; and Assembly of the WEU, 37th Ordinary Session (1st part), Report Submitted on Behalf of the Technical and Aerospace Committee, Document 1272, p. 10.

10. See *Welt am Sonntag* (Hamburg), February 10, 1991. Despite repeated government denials, reports have surfaced that the strength of the *Bundeswehr* could fall below 250,000. See, for example, "Genscher Supports NATO-Eastern Europe Ties," *ADN* (Berlin), November 7, 1991, in *FBIS-WEU-91-216*, p.10.

11. For an excellent overview of this dynamic process, see Ulrich Weisser, "Die Weichen sind gestellt: Rahmenbedingungen und Grutentscheidungen sur Bundeswehrgesamtplanung," *Soldat und Technik*, Volume 34, No. 3, 1991, pp. 159-162.

12. See *Frankfurter Allgemeine*, February 27, 1991.

13. See Michael J. Inacker, "A Real People's Army After Six Months? Legends and Truths about the National People's Army after the Upheaval in the GDR," *Aussenpolitik*, Volume 42, No. 1, 1991, pp. 31-36.

14. See Young, "Angst in Bonn," p. 78.

15. British Information Services, New York, Policy Statement 47/91, Statement by the Secretary of State for Defence, the Right Honorable Tom King, July 23, 1991, July 24, 1991; Charles Miller and Michael Witt, "King: Massive Troop Cuts Will Not Impair Army," *Defense News*, July 29, 1991, p. 9; and Ian Kemp, "UK Unveils Army for the 1990s," *Jane's Defence Weekly*, August 3, 1991, p. 182.

16. Barbara Starr, "JCS Gives Glimpse of New US Role," *Jane's Defence Weekly*, March 23, 1991, p. 424. Indications of even more drastic cuts are foreshadowed by recent nonbinding House and Senate resolutions calling for reductions to 100,000. "US Studies New Role for Troops in Changed Europe," *Los Angeles Times*, September 22, 1991, p. 8.

17. Although full details have not yet been revealed, the Belgians, under the Charlier II Plan, envisage substantial cuts and restructuring. For example, see early indications in "Guy Coeme refuse d'enroler le communitaire a la Defense," *Le Soir* (Brussels), July 13, 1991, and Etat-Major de la Force Terrestre, "Restructuration de la Force Terrestre," *GS Info* (Brussels), No. 10, April 26, 1991. Although not specific, as yet, indications are the French may cut their the armed forces by 70,000 over the next 10 years. "Accord Proposes Flat French Defense Spending, Then Cuts," *Defense News*, August 19, 1991, p. 5. The Netherlands has announced the most detailed plan for reductions in the Dutch armed forces. See MOD of the Netherlands, Defence White Paper - 1991, Reorganizations and Reductions: The Netherlands Armed Forces in a Changing World (Abridged Version), March 1991, pp. 34-40.

18. Press Communique S-1(90)36, London Summit Declaration on a Transformed North Atlantic Alliance, July 6, 1990.

19. See the final communique from the Defense Planning Committee and the Nuclear Planning Group meeting of May 29, 1991, NATO Information Services (Brussels), M-DPC/NPG-1(91)38.

20. See *The Washington Post*, May 24, 1991.

21. Parenthetically, by making multinational reaction forces the centerpiece of crisis management, Alliance nations may find obtaining scarce resources needed to equip these forces (e.g., strategic transport for interregional reinforcements that will be required to establish adequate operational level reserves), more readily forthcoming from their political masters.

22. See *Defense News* (Washington, DC), April 1, 1991.

23. See *Die Welt* (Hamburg), May 27, 1991.

24. A brief description of the Franco-German proposal may be found in "France and Germany Propose European Armed Force," *London Financial Times*, October 16, 1991, p. 24. The proposed strength of the corps is addressed in "Joxe: Spain to Join Franco-German Corps," *Le Monde* (Paris), November 9, 1991, p. 6.

25. "Cold War Battle Orders Make Way For New NATO Era," *Jane's Defense Weekly*, June 8, 1991, p. 961.

26. Interview with Admiral William Smith, "One on One," *Defense News*, September 23, 1991, p. 38.

27. Michael Mecham, "NATO's New Strategy Stresses Mobility for 'Crisis Management'" *Aviation Week and Space Technology*, June 3, 1991, p. 23.

28. One U.S. division will participate in a German led corps, while the U.S. corps will control one U.S. and one German division. Additionally, a U.S. brigade may participate in a Belgian led corps. "Cold War Battle Orders Make Way for a New NATO Era," *Jane's Defence Weekly*, June 8, 1991, p. 961.

29. A brief description of the VII Corps and 12th Panzer Division is found in Lt. Gen. Frederick M. Franks, Jr. and Major Alan T. Carver, "Building a NATO Corps," *Military Review*, July 1991, pp. 30-33.

30. Headquarters, Department of the Army, Field Manual 100-15, *Corps Operations*, September 1989, p. 1-0.

31. Command and General Staff College, Fort Leavenworth, KS, Field Circular 100-15, *Corps Operations*, March 1984, pp. 1-2 to 1-3.

32. Command and General Staff College, Fort Leavenworth, KS, Field Circular 71-100, *Armored and Mechanized Division and Brigade Operations*, May 1984, pp. A-35 and A-40.

33. For example, the Germans are concentrating operational tasks at the divisional level. "JDW Interview with General Klaus Naumann," *Jane's Defence Weekly*, October 5, 1991, p. 636.

34. The answer to this question presumes that NATO forces will be called upon to defend only existing NATO territory. Should additional nations join NATO, or should NATO offer other nations some form of security guarantee, a different operational concept might emerge.

35. "The immensely detailed General Defense Plan, which laid down allied war time positions to the last howitzer, will give way to vague 'deployment guidelines.'" David Fairhall, "NATO Plans Strategy for All Seasons," *The Guardian*, November 4, 1991.

36. Major H. Kasselmann (GE Army), Arms Control Branch, SHAPE, contributed greatly to the development of this section. The authors gratefully acknowledge his assistance, but remain solely responsible for the views expressed.

37. It remains to be seen whether nations other than the United States will make the necessary investments to procure such systems in adequate numbers and with the requisite logistical support.

38. This comment presupposes that any new command and control arrangements resulting from on-going organizational studies within NATO will result in AFCENT being responsible for the defense of the coastline and its respective air and sea space. Joseph Owen, "NATO May Scrap Command," *Stars and Stripes* (Europe), November 30, 1991, p. 1.

39. Frederick II (the Great) of Prussia indicated: "He who would preserve everything, preserves nothing." *The Instruction of Frederick the Great for His Generals, 1747*, in Brig. Gen. T.R. Phillips, ed., *Roots of Strategy*, Harrisburg, PA: Stackpole Books, 1985, p. 345.

40. It may be interesting to note that in the Gulf War, the 24th (U.S.) Infantry Division (Mechanized) moved 320 kilometers—roughly the distance from Frankfurt to Berlin—in 36 hours. "Running War by the Book," *Jane's Defence Weekly*, April 6, 1991, p. 537. Nor was this experience unique.

41. For example, see comments contained in Lt. Col. Harry M. Emerson III, "Do It Yourself CSS [Combat Service Support] in Gulf," *Military Review*, August 1991, pp. 98-99; and Starr, "Winners and Losers in the NATO CFE Shareout," p. 797. Granted, some of these shortfalls resulted from operating in a desert region bereft of the infrastructure and modern facilities that would be available in Central Europe.

42. See Guy Willis and Gerard Turbe, "Airmobile Formations—Shaping the Helicopter's Influence on the Land Battle," *International Defense Review*, Volume 23, No. 4., 1990, pp. 377-381; and, R.D. Grist, "Airmobile Force in Central Europe," in *Seaford House Papers, 1987*, London: Royal College of Defence Studies, 1988, pp. 123-141.

43. See *Die Welt* (Hamburg), December 28, 1990.

44. See *La Derniere Heure* (Brussels), March 20, 1991.

45. The authors are grateful for the comments of Wing Commander C. LeCornu (UK RAF) and Lt. Col. J. de Graauw (RNLAf) of the Arms Control Branch, SHAPE, who contributed greatly to the insights contained in this section. The authors, nonetheless, retain sole responsibility for the views expressed.

46. Starr, "Winners and Losers in NATO CFE Shareout," p. 19. Nor is it likely that the figure of 5,708 will be maintained in the future. For example, Belgium has plans to disband one of its eight squadrons and Germany announced it will maintain less than 500 aircraft by 1997. (Report, Assembly of the WEU, Document 1272, May 14, 1991, pp. 8, 10, respectively.) In its Defence White Paper, The Netherlands indicated reductions to 144 aircraft (Netherlands Defence White Paper (Abridged Version)), March 1991, p. 39. The United States has indicated that only three wings of aircraft (nominally 216 aircraft) will be retained in Europe. Starr, "JCS Gives Glimpse of New US Role," p. 424. Thus, these four nations will maintain roughly half of their actual entitlements (1027 in holdings vs. 1988 in entitlements). Early indications are that the UK and France will adopt similar reductions, although the extent of such reductions have not yet been specified in terms of absolute numbers of aircraft.

47. See, for example, "Eyes of the Storm," *Jane's Defence Weekly*, May 4, 1991, pp. 735-737; and, John Train, "The Gulf War and the Future of NATO," *Armed Forces Journal International*, July 1991, p. 24.

48. For example, United States will reduce its dedicated tactical reconnaissance assets. While the dedicated aircraft will not be replaced, the USAF will acquire tactical reconnaissance pods that can be attached to multi-role F-16s which will be utilized in the reconnaissance mission. Bill Sweetman, "USAF Looks to a Leaner, Multi-Mission Future," *Jane's Defence Weekly*, February 23, 1991, pp. 259-260. Other nations have indicated similar policies. While the pods may improve the reconnaissance capabilities of the individual aircraft, a potential problem may emerge in that fewer aircraft will be tasked to perform the same level of missions. A tension may exist in the assignment of multi-role aircraft to a particular mission, when there are not enough aircraft to go around.

49. For example, Germany may not participate in the European Fighter Aircraft (EFA) Program. "EFA: Key to the Future," *Jane's Defence Weekly*, November 2, 1991, p. 830; and, the U.S. Congress apparently will not fund the B-2 bomber. John Lancaster and Steven Pearlstein, "Conferees Turn Down New B-2s," *The Washington Post*, November 1, 1991, p. 1.

50. For example, the Tomahawk Land Attack Missile (TLAM), Stand-off Land Attack Missile (SLAM), High Speed Anti-Radiation Missile (HARM), and Air Launched Anti-Radiation Missile (ALARM) all performed well in the Gulf Campaign. For brief descriptions see "SLAM Makes Combat Debut," *Jane's Defence Weekly*, February 2, 1991, p. 137; and "Long Range ASMs: Case for a New Priority," *Jane's Defence Weekly*, March 16, 1991, pp. 387-395.

51. See, e.g., reductions in numbers of USAF A-10s in Sweetman, "USAF Looks Ahead to a Leaner, Multi-Mission Future," p. 259. The United States is not alone in this regard. The Royal Netherlands Air Force will give priority to air defense missions. Netherlands Defence White Paper (Abridged Version), March 1991, p. 39.

52. G.D. Wardak, *The Voroshilov Lectures*, Vol. I, *Issues of Soviet Military Strategy*, ed. by Graham H. Turbiville, Jr., Washington, DC: National Defense University Press, 1989, pp. 315-339, provides an excellent discussion of Soviet doctrinal views on the importance of air operations in modern war.

53. Examples of this trend are the decision by the Netherlands to establish neither the Guided Missile Group, Netherlands nor purchase any additional Patriot launchers to overcome existing deficiencies, and German plans to reduce its operating air defense units from 18 to 6. Netherlands Defence White Paper (Abridged Version), March 1991, pp. 38,39 and "A Leaner Air Force for a New Era," *Jane's Defence Weekly*, October 5, 1991, p. 611, respectively.

54. For example, in the Gulf War WEU (and, hence, also our allies in NATO) units discovered—much to their surprise—that U.S. forces were using a new channel in their IFF procedures. See Assembly of the Western European Union, *Consequences of the Invasion of Kuwait: Continuing Operations in the Gulf Region*, Report 1248, Paris, November 7, 1990, p. 14.

55. For example, in the 43 days of air operations in the Gulf, the coalition averaged in excess of 2,500 sorties per day. "Success from the Air," *Jane's Defence Weekly*, April 6, 1991, p. 530. And, this sortie rate was achieved with fewer numbers of aircraft than would be available for operations in the Central Region.

56. Readers interested in a more comprehensive discussion of future command and control considerations should consult Thomas-Durell Young, "Reforming NATO's Command Structures," Carlisle Barracks, PA: Strategic Studies Institute, forthcoming.

57. For example, U.S. counter-mine capabilities were found wanting in the recent campaign in operations in Kuwait and Iraq. See, for example, John G. Roos, "Post-Cold War Realities Take Big Bite Out of NATO," *Armed Forces Journal International*, December 1991, pp. 19-20.

58. For example, Defense Minister Stoltenberg recently estimated 16 billion DM would have to be spent on modernization and environmental clean up of military facilities alone. "Bundestag Debates Future Role of the Bundeswehr," *Sueddeutsche Zeitung* (Munich), September 20, 1991, FBIS-WEU-91-202, October 18, 1991.

59. Terms of the "Two Plus Four" Treaty can be found in *NATO Review*, Vol. 38, No. 5, October 1990, pp. 30-32.

60. Henry van Loon, "NATO Commanders Flex Military Muscle as Alliance Planners Craft New Structure," *Armed Forces Journal International*, December 1991, p. 31.

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